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NASA Procedural Requirements

COMPLIANCE IS MANDATORY

NPR 1800.1C

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Request Notification of Change

(NASA Only)

Subject: NASA Occupational Health Program Procedures w/Change 1 (12/31/2009)

Responsible Office: Office of the Chief Health & Medical Officer

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Appendix C. Physical Examination Matrix

1. Specific Potentially Hazardous Exposures

	Exam	Regulation
A.	Arsenic	29 CFR Part 1910.1018
B.	Asbestos	29 CFR Part 1910.1001 29 CFR Part 1926.1101
C.	Benzene	29 CFR Part 1910.1028
D.	Beryllium	10 CFR Part 850 (DOE) NIOSH
E.	Cadmium	29 CFR Part 1910.1027 29 CFR Part 1926.1127
F.	Chromium	29 CFR Part 1910.1026 29 CFR Part 1926.1126
G.	Ethylene Oxide	29 CFR Part 1910.1047

H.	Formaldehyde	29 CFR Part 1910.1048
I.	Hydrazines	NIOSH
J.	Isocyanates	NIOSH
K.	Lead	29 CFR 1910.1025 29 CFR 1926.62
L.	Mercury	OSHA CPL 02-02-006 NIOSH, ATSDR
M.	Methylene Chloride	29 CFR Part 1910.1052 ATSDR
N.	4,4' Methylenebis (2-chloroaniline) (MOCA, MBOCA)	NIOSH, ATSDR, OSHA
O.	4,4' Methylenedianiline (MDA)	29 CFR 1910.19, 1910.1050 and 1926.60
P.	Nitrogen Tetroxide (Dioxide)	NIOSH
Q.	Polychlorinated Biphenyls (PCB)	ATSDR NIOSH Current Intelligence Bulletin 45, February 24, 1986
R.	Silica Dust	29 CFR 1910.1000, 29 CFR 1915, OSHA CPL 2-2.7, NIOSH
S.	Trichloroethylene	NIOSH

2. Hazardous Environments/ Workplace Examinations

	Exam	Regulation
A.	Bloodborne Pathogens	20 CFR 1910.1030
B.	Chemistry Laboratory	29 CFR 1910.1450
C.	Hazardous Waste Operations and Emergency Response	29 CFR 1910.120
D.	Health Care Provider	29 CFR 1910.1030, CDC

E.	Ionizing Radiation	10 CFR 20.1502
F.	Lasers	ANSI Z 136.1
G.	Noise	29 CFR 1910.95 NPR 1800.1B Chapter 4.9
H.	Pesticides	
I.	Spray Painting	
J.	Water and Sewage	
K.	Welding	NIOSH Criteria Document No. 88-110

3. Certification Examinations

	Exam	Regulation
A.	Childcare Workers	
B.	Confined Space/Tank Entry	29 CFR 1910.134
C.	Crane Operator/Ground Floor/Remote-Operation/High/Cabin/Pulpit	NS 8719.9 ASME B30.2-2001
D.	Diver	29 CFR 1910.423 29 CFR 1910.424
E.	DOT/Commercial Driver License/Motor Vehicle Certification/Multiple Passenger Van	49CFR 391.41-49 49 CFR 240.12
F.	Down Range/Shipboard Duty	46 CFR Subpart 10 and 12
G.	Firefighter	NFPA 1582

H.	Food Handler	46 CFR 12.25-20 NPR 1800.1B Chapter 4.10
I.	Locomotive Engineer	49 CFR 240.121
J.	Motive (Heavy) Equipment Operator	
K.	Occupational Respirator Use	29 CFR 1910.134 29 CFR 1910.134 Appendix A
L.	Ordnance Handler	
M.	Primary Animal Contact	
N.	Primary Crew Contract	JSC 22538
O.	Security	
P.	Self Contained Atmospheric Protective Ensemble	29 CFR 1910.134
Q.	Soldering	
R.	Voluntary Respirator Use	29 CFR 1910.134 29 CFR 1910.134 Appendix A

4. Flight Activities

	Exam	Regulation
A.	First Class Airman's Medical Certificate	14 CFR 67 NPR 7900.3
B.	Second Class Airman's Medical Certificate	14 CFR 67 NPR 7900.3

C.	Third Class Airman's Medical Certificate	14 CFR 67
D.	Air Traffic Control Specialist or Flight Crew	OPM GS-2152
E.	Qualified Non-Crew Member	

5. Special Administrative Examinations

	Exam	Regulation
A.	Fitness for Duty	NPR 1800.1B
B.	Return to Work	NPD 1840.1B NPR 1800.1B
C.	International Travel	NPR 1810.1A

6. Voluntary Health Maintenance

	Exam	Regulation
A.	Complete Health Maintenance Examination	FEBHP NPR 1800.1B
B.	Annual Health Maintenance Examination	FEBHP NPR 1800.1B
C.	Fitness Center Clearance	NPR 1800.1B

EXAMINATION PROTOCOLS

1. Surveillance Examinations for Workers with Specific Potentially Hazardous Exposures

A. Arsenic	
Reference	OSHA 29 CFR Part 1910.1018
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Exam, if less than 45 years old 3. Semiannually, if 45 years old or older, or with 10 or more years of exposure

	4. Variable or Exposure-Determined Examination 5. Exit/Reassignment Examination
Laboratory	1. Chest X-ray (PA) 2. Discretionary Tests <ul style="list-style-type: none"> a. Pulmonary Function b. Complete Blood Count
Physical Exam	1. Medical and Occupational History 2. Physical Examination with focus on peripheral and CNS, GI system, skin including nasal mucosa, respiratory tract, and thyroid 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Target Organs	Liver, kidneys, skin, lungs, lymphatic system, CNS, PNS
Written Opinion	Standard Written Medical Opinion
Medical Removal	No requirement in standard

B. Asbestos	
Reference	OSHA 29 CFR Part 1910.1001 OSHA 29 CFR Part 1926.1101
Frequency	1. Baseline Examination 2. Annual Examination 3. Variable or Exposure-Determined Examination 4. Exit/Reassignment Examination
Laboratory (TX)	1. Chest X-ray (PA) (Must be read by "B reader"): <ul style="list-style-type: none"> a. Baseline b. Periodic: <ul style="list-style-type: none"> i. 1-10 years since first exposure:

	<ol style="list-style-type: none"> 1. every 5 years ii. 10+ years since first exposure, and: <ol style="list-style-type: none"> 1. below age 35, every 5 years 2. age 35-45, every 2 years 3. age 45+, annually 2. Pulmonary Function 3. Discretionary Tests <ol style="list-style-type: none"> a. Hemocult b. PPD c. Urinalysis (dipstick)
Physical Exam	<ol style="list-style-type: none"> 1. Required Asbestos Questionnaire (Standardized on initial exam, Abbreviated Standardized on annual exam) 2. Physical Examination with focus on respiratory, CV, and GI systems 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Target Organs	Respiratory/lungs, pleural (Mesothelioma), gastrointestinal
Written Opinion	Standard Written Medical Opinion for Asbestos within 30 days, including statement that employee was informed of the increased risk of lung cancer attributable to combined effect of smoking and asbestos.
Medical Removal	No requirement in standard

C. Benzene

Reference	OSHA 29 CFR Part 1910.1028
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Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination 3. Variable or Exposure-Determined Examination
Laboratory	<ol style="list-style-type: none"> 1. Complete Blood Count (CBC) including a leukocyte count with differential, a quantitative thrombocyte count, hematocrit, hemoglobin, erythrocyte count, and erythrocyte indices (MCV, MCH, MCHC). (Repeat within 2 weeks if abnormal, refer to standard for action level) 2. Pulmonary Function (if employee wears respirator, initial exam and then every 3 years) 3. For Emergency Exposures Only: <ol style="list-style-type: none"> a. Urine sample provided at the end of employee's shift for urinary phenol test within 72 hours and urine specific gravity corrected to 1.024. b. If urinary phenol test is equal to or greater than 75 mg phenol/L of urine, repeat Complete Blood Count monthly for 3 months. 4. Discretionary Tests: <ol style="list-style-type: none"> a. Refer to Appendix C of standard for guidance
Physical Exam	<ol style="list-style-type: none"> 1. Detailed Medical and Occupational History initially, brief update annually 2. Complete Physical Examination with focus on the blood, skin, CNS, and liver and kidney function 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Target Organs	Eyes, respiratory, CNS, skin, blood/bone marrow

Written Opinion	Standard Written Medical Opinion within 15 days
Medical Removal	Required when referred to hematologist/internist

D. Beryllium	
Reference	10 CFR Part 850 (DOE rule)
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination for beryllium workers 3. Every 3 years for beryllium associated workers 4. Variable or Exposure-Determined Examination
Laboratory	<ol style="list-style-type: none"> 1. Chest X-ray (PA) (Must be read by "B reader"): <ol style="list-style-type: none"> a. Baseline b. Every 5 years 2. Pulmonary Function 3. Be-LPT (for significant exposure)
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination with focus on skin, eyes, and respiratory tract 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Target Organs	Respiratory, kidney, CNS, liver, skin, eyes
Written Opinion	Standard Written Medical Opinion within 14 days of receipt of results
Medical Removal	Required based upon medical recommendation
Multiple Physician Review Process	Required if requested by examinee (see CFR)

E. Cadmium	
Reference	OSHA 29 CFR Part 1910.1027 OSHA 29 CFR Part 1926.1127

Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination 1 year following Baseline Examination 3. Biennially Examination (see standard for guidance on frequency with abnormal laboratory findings) 4. Variable or Exposure-Determined Examination 5. Exit/Reassignment Examination
Laboratory	<p>Annual Laboratory:</p> <ol style="list-style-type: none"> 1. Cadmium in urine (CdU) (See Appendix F for protocol for sample handling and laboratory selection) 2. Beta-2 microglobulin in urine (B(2)-M) 3. Cadmium in blood (CdB) 4. BUN and Serum Creatinine 5. Complete Blood Count (CBC) 6. Chest X-ray (PA) <ol style="list-style-type: none"> a. Baseline b. Exit/Reassignment 7. Pulmonary Function 8. Discretionary Tests: <ol style="list-style-type: none"> a. Annual Chest X-ray b. PSA (for males 50 years and older) c. Urinalysis
Physical Exam	<ol style="list-style-type: none"> 1. Cadmium Exposure Questionnaire required (Appendix D in CFR) 2. Complete Physical Examination with focus on blood pressure, respiratory, and urinary systems (refer to health effects Appendix A) 3. Prostate palpation, males 40 years and older

	4. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Written Opinion	Standard Written Medical Opinion for Cadmium
Medical Removal	Required
Multiple Physician Review Process	Required if requested by examinee (see CFR)

F. Chromium	
Reference	OSHA 29 CFR 1910.1026, 29 CFR Part 1926.1126
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination 3. Variable or Exposure-Determined Examination 4. Exit/Reassignment Examination
Laboratory	Discretionary
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Exam with focus on skin and respiratory tract
Target Organs	Respiratory, liver, kidney, eye, skin
Written Opinion	Standard Written Medical Opinion within 30 days
Medical Removal	No requirement in standard

G. Ethylene Oxide	
Reference	OSHA 29 CFR Part 1910.1047

Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination 3. Variable or Exposure-Determined Examination 4. Exit/Reassignment Examination
Laboratory	<ol style="list-style-type: none"> 1. Complete Blood Count (CBC) with differential 2. Discretionary Tests: 3. Pregnancy test 4. Laboratory evaluation of fertility if requested by examinee and considered appropriate by provider 5. Blood Chemistry Panel 6. Urinalysis
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination with focus on pulmonary, hematologic, neurologic, and reproductive system, and eyes and skin. 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Target Organs	Respiratory, blood, CNS, reproductive, eye, skin, liver, kidney
Written Opinion	Standard Written Medical Opinion within 15 days
Medical Removal	No requirement in standard

H. Formaldehyde	
Reference	OSHA 29 CFR Part 1910.1048
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination (for employees required to wear respirator, others discretionary)

	3. Variable or Exposure-Determined Examination 4. Exit/Reassignment Examination
Laboratory	1. Pulmonary Function (for required respirator use) <ol style="list-style-type: none"> Baseline Annual
Physical Exam	1. Medical and Occupational History (nonmandatory medical disease questionnaire - Appendix D in CFR is recommended) 2. Physical Examination with focus on eyes, skin, mucous membranes, and allergies and allergic reactions 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Target Organs	Respiratory, eyes, skin
Written Opinion	Standard Written Medical Opinion for Formaldehyde within 15 days of results
Medical Removal	Required
Multiple Physician Review Process	Required if requested by examinee (see CFR)

I. Hydrazines

Reference	
Frequency	1. Baseline Examination 2. Annual Examination

Laboratory	<ol style="list-style-type: none"> 1. Baseline Chest X-ray 2. Complete Blood Count 3. Liver Profile 4. Urinalysis with microscopic 5. Discretionary: <ol style="list-style-type: none"> 1. Pulmonary Function
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Target Organs	Eyes, respiratory, skin, CNS, liver, kidneys
Written Opinion	No requirement in standard
Medical Removal	No requirement in standard

J. Isocyanates (e.g., Methylene Diisocyanate (MDI), Toluene Diisocyanate (TDI).)	
Reference	NIOSH 78-215
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Variable or Exposure Determined Examination 3. Annual Examination
Laboratory	<ol style="list-style-type: none"> 1. Pulmonary Function 2. Chest X-ray (PA) at 5-year intervals
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination with focus on respiratory system, skin, and mucous membranes (Isocyanates are potent sensitizers. Acute exposures may cause severe airway obstruction.) 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification

	Examination. Occupational Respirator Use
Target Organs	Eyes, respiratory, kidney, liver, skin, CNS
Written Opinion	No requirement in standard
Medical Removal	No requirement in standard

K. Lead	
Reference	OSHA 29 CFR 1910.1025 OSHA 29 CFR 1926.62
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination for employee's with blood lead over 40ug/100g in the preceding 12 months 3. Variable or Exposure-Determined Examination 4. Exit/Reassignment Examination
Laboratory	<ol style="list-style-type: none"> 1. Blood Lead and ZPP (Baseline and every 6 months) 2. If Blood Lead is at or above 40ug/100g, repeat every 2 months 3. Repeat blood lead 2 weeks after any test is at or above 60ug/100g (requires medical removal) 4. During Medical Removal, Blood Lead and ZPP monthly 5. Hemoglobin and Hematocrit, red cell indices, and examination of peripheral smear morphology 6. BUN and Serum Creatinine 7. Urinalysis with microscopic 8. Discretionary Tests: <ol style="list-style-type: none"> a. Pregnancy/fertility testing, if employee requests
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Complete Physical Examination with focus on teeth, gums, hematological, GI, CV, renal, and neurological system.

	<p>3. Blood Pressure</p> <p>4. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use</p>
Target Organs	Pulmonary, kidney, blood, reproductive, CNS, gastrointestinal, CV, gums, teeth, eyes
Written Opinion	Standard Written Medical Opinion for all evaluations and employee written notification of blood level results over 40ug/100g within 5 business days
Medical Removal	Required (see CFR for criteria)
Multiple Physician Review Process	Required if requested by examinee (see CFR)

L. Inorganic Mercury	
Reference	OSHA CPL 02-02-06
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Interim History 3. Variable or Exposure-Determined Examination
Laboratory	<ol style="list-style-type: none"> 1. Complete Blood Count (CBC) 2. Urinalysis 3. Voluntary pregnancy test, where appropriate 4. Urine mercury level (for history of exposure, recommend all employees in given work area be tested at the same time). If exposed above PEL test every 3 months, if below PEL test every 6 months.
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History (annual interim history) 2. Physical Examination with focus on central nervous and respiratory systems, kidneys, and skin.

	3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Target Organs	Liver, kidney, CNS, PNS, lung, eye, mucous membranes
Written Opinion	Standard Written Medical Opinion
Medical Removal	No requirement in standard

M. Methylene Chloride	
Reference	OSHA 29 CFR Part 1910.1052
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Medical and Occupational History Update 3. Examination Frequency Age Determined: <ol style="list-style-type: none"> a. Annual, if age 45 or older b. Every 36 months under age 45 4. Variable or Exposure-Determined Examination 5. Exit/Reassignment Examination
Laboratory	<ul style="list-style-type: none"> • Discretionary: <ul style="list-style-type: none"> • Pulmonary Function • Hemoglobin and Hematocrit • ALT, SGPT • Post-shift Carboxyhemoglobin • ECG
Physical Exam	<ul style="list-style-type: none"> • Methylene Chloride Questionnaire required (annual interim history) • Physical Examination focus on employee health status and analysis of questionnaire responses • Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Target Organs	Respiratory, CV, liver, CNS, skin, blood

Written Opinion	<p>Standard Written Medical Opinion for Methylene Chloride with the following within 15 days of completion of medical and laboratory findings but not more than 30 days past examination including:</p> <ul style="list-style-type: none"> • Statement that the physician has informed the employee Methylene Chloride (MC) is a potential carcinogen risk • The risk factors for heart disease, and the potential exacerbation of underlying heart disease from MC exposure and its metabolism to carbon monoxide
Medical Removal	Required
Multiple Physician Review Process	Required if requested by examinee (see CFR)

N. 4,4' Methylenebis (2-chloroaniline) (MOCA, MBOCA)	
Reference	NIOSH Publication No. 78-188
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination 3. Laboratory only every 6 months (employees working directly in production or handling for 10 years or longer)
Laboratory	<ol style="list-style-type: none"> 1. Complete Blood Count (CBC) 2. Blood Chemistry Profile 3. Urinalysis with microscopic 4. Chest X-ray
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Focused Physical Examination
Target Organs	Liver, blood, kidneys
Written Opinion	No requirement in standard
Medical Removal	No requirement in standard

O. 4,4' Methylenedianiline (MDA)	
Reference	OSHA 29 CFR 1910.1050
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination
Laboratory	<ol style="list-style-type: none"> 1. Blood Chemistry Profile 2. Urinalysis with microscopic
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination with focus on skin disease and liver dysfunction 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Target Organs	Skin, eyes, liver, CV, spleen
Written Opinion	Standard Written Medical Opinion required
Medical Removal	Required
Multiple Physician Review Process	Required if requested by examinee (see CFR)

P. Nitrogen Tetroxide (Dioxide)	
Reference	
Frequency	Baseline Examination
Laboratory	Discretionary
Physical Exam	<ul style="list-style-type: none"> • Medical and Occupational History • Physical Examination with focus on pulmonary system, skin, and eyes

Target Organs	Eyes, respiratory, CV
Written Opinion	No requirement in standard
Medical Removal	No requirement in standard

Q. Polychlorinated Biphenyls (PCB)	
Reference	NIOSH Current Intelligence Bulletin 45, February 24, 1986
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination 3. Variable or Exposure-Determined Examination 4. Exit/Reassignment Examination
Laboratory	<ol style="list-style-type: none"> 1. Blood Chemistry 2. Complete Blood Count 3. Urinalysis 4. Chest x-ray (baseline) 5. Discretionary Tests: <ol style="list-style-type: none"> a. ECG b. Pulmonary Function c. Fecal Occult
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination with focus on the skin, liver, and nervous system. 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Target Organs	Skin, liver, CNS
Written Opinion	No requirement in standard

Medical Removal	No requirement in standard
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R. Silica Dusts	
Reference	NIOSH Publication No. 2002-129, OSHA 29 CFR 1910.1000
Frequency	<ul style="list-style-type: none"> • Baseline Examination • Annual Examination • Variable or Exposure-Determined Examination
Laboratory	<ul style="list-style-type: none"> • Chest X-ray (Must be read by "B reader"): <ul style="list-style-type: none"> • Baseline • Every 5 years for workers exposed less than 20 years • Every 2 years for workers exposed over 20 years • Pulmonary Function • PPD
Physical Exam	<ul style="list-style-type: none"> • Medical and Occupational History • Physical Examination with focus on respiratory system • Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Target Organs	Lungs/respiratory, eyes
Written Opinion	<p>Standard Written Medical Opinion including:</p> <ul style="list-style-type: none"> • Signs and symptoms of silica exposure manifested by the employee • Report of chest x-ray and pulmonary function test • Opinion on whether employee has detected

	<p>medical condition that may place employee at increased risk of impairment to the employees health from exposure to silica or other substances or would directly or indirectly aggravate any detected medical condition</p> <ul style="list-style-type: none"> • Any recommended limitations upon employee's exposure to silica or other substances or upon use of Personal Protective Equipment (PPE) and respirators • Statement employee has been informed by the physician of any medical condition which requires further examination or treatment
Medical Removal	No requirement in standard

S. Trichloroethylene	
Reference	
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination
Laboratory	Discretionary
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination with focus on cardiac, pulmonary, liver, and kidneys 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Target Organs	Respiratory, CV, kidney, liver, skin, CNS, eyes
Written Opinion	No requirement in standard
Medical Removal	No requirement in standard

2. Hazardous Environments/Workplace Examinations

A. Bloodborne Pathogens	
Reference	OSHA 20 CFR 1910.1030
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination (for occupational groups covered under the standard) 2. Variable or Exposure-Determined Examination
Laboratory	<ol style="list-style-type: none"> 1. Hepatitis B Vaccine 2. Hepatitis B Surface antibody (HepBSAb)Titer (required one time only after 3rd dose completed) 3. Declination statement must be signed if Hepatitis B Vaccine declined by employee (Appendix A of OSHA Standard) 4. Discretionary: Post-exposure <ol style="list-style-type: none"> a. Victim: HIV test, HepBSAb if not already documented, and HepCAb (other tests per provider) b. Source (after consent given): HIV test (rapid screen if available), HepB Surface Antigen (HepBSAg), and HepCAb (other tests per provider) c. If any HIV test is performed because of a specific occupational exposure, then a confidential ID system and a secure method to receive the test results shall be insured for both victim and source.
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Focused Physical Examination (discretionary)
Target Organs	Multiple organs

Written Opinion	Standard Written Medical Opinion required within 15 days of completion of evaluation including whether Hepatitis B immunization is indicated and if the employee has received such vaccine
Medical Removal	No requirement in standard

B. Chemical Laboratory

Reference	OSHA 29 CFR 1910.1450
Frequency	Variable or Exposure-Determined Examination
Laboratory	<ol style="list-style-type: none"> 1. Discretionary: <ol style="list-style-type: none"> a. Blood Chemistry Profile b. Complete Blood Count (CBC) c. Chest X-ray d. Pulmonary Function e. Urinalysis f. Visual Acuity
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Focused Physical Examination 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Target Organs	Multiple organs, especially eyes, skin, liver
Written Opinion	Standard Written Opinion required
Medical Removal	No requirement in standard

C. Hazardous Waste Operations and Emergency Response

Reference	OSHA 29 CFR 1910.120, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination 3. Variable or Exposure-Determined Examination 4. Exit/Reassignment Examination
Laboratory	<ol style="list-style-type: none"> 1. Audiogram (Baseline) 2. Visual Acuity, Color Discrimination, Visual Fields 3. Complete Blood Count (CBC) 4. Blood Chemistry 5. Urinalysis 6. Chest X-Ray (Baseline) 7. Discretionary Tests: <ol style="list-style-type: none"> a. ECG b. Exercise Stress Test c. Pulmonary Function d. Other based on specific exposure (see Guidance Manual) e. Chest X-Ray (Followup)
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination with focus on worker's fitness, including ability to wear any required PPE, back or musculoskeletal problems, heat stress, claustrophobia 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use 4. Employee may also be covered by Bloodborne Pathogen standard

Target Organs	Multiple organs
Written Opinion	<p>Standard Written Medical Opinion required including:</p> <ul style="list-style-type: none"> a. Statement that the employee has sufficient strength, endurance, and emotional stability to perform the work b. Opinion that no medical condition was detected which would place the employee at increased risk of material impairment of the employee's health or would be a hazard to self or others from hazardous waste operations, emergency response, or respirator use c. Any limitations in job functions or ability to wear PPE d. The results of the medical examination and tests were also provided if requested by the employee
Medical Removal	No requirement in standard
Note regarding eligibility	<p>Protocol covers the following employees:</p> <ul style="list-style-type: none"> a. Potentially exposed to hazardous substances, without regard to the use of respirator, for more than 30 days per year b. Required to use a respirator more than 30 days per year c. Injured from exposure of hazardous substances during an emergency incident d. Members of a HazMat team <p>Employees Not Covered in Standard:</p> <ul style="list-style-type: none"> a. Emergency responders not designated members of HazMat team (e.g., security, firefighters)

D. Healthcare Provider	
Reference	OSHA 20 CFR 1910.1030
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Variable or Exposure-Determined Examination
Laboratory	<ol style="list-style-type: none"> 1. Hepatitis B Vaccine (required or declination letter shall be completed) or demonstrated immunity 2. PPD required for baseline, periodic testing is discretionary based on risk assessment for the facility 3. Discretionary: <ol style="list-style-type: none"> a. Hepatitis Profile b. Measles, Mumps, Rubella Vaccine c. Diphtheria, Tetanus, and Pertussis (Td, Tdap) d. Varicella Vaccine (if no history of chicken pox) e. Influenza Vaccine offered annually
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Focused Physical Examination (discretionary) 3. Employee also covered by Bloodborne Pathogen Standard
Target Organs	Respiratory, blood, liver, skin

E. Ionizing Radiation	
Reference	
Frequency	Variable or Exposure-Determined Examination
Laboratory	Complete Blood Count (CBC) with Differential

Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History including exposure 2. Focused Physical Examination
Target Organs	Exposure determined

F. Lasers	
Reference	ANSI Z 136.1 (2007), Required for Class 3B and Class 4 Lasers
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination (required) 2. Variable or Exposure-Determined Examination (within 48 hours)
Laboratory	<ol style="list-style-type: none"> 1. Visual Acuity with refraction corrections to 20/20 (6/6) far and near vision (more extensive examination indicated if this is not met - see standard) 2. Amsler Grid (or similar pattern to test macular function for vision distortions and scotomas) 3. Color Vision Discrimination (Ishihara or similar color vision test) 4. Ocular fundus Examination with Ophthalmoscope or appropriate Fundus Lens at a Slit Lamp if visual acuity, macular function, or color vision is abnormal.
Physical Exam	<ol style="list-style-type: none"> 1. Medical, Occupational, and Ocular History 2. Focused Physical Examination performed by or under supervision of ophthalmologist, optometrist, or other qualified physician 3. Limited skin examination
Target Organs	Eye, skin
Written Opinion	No requirement in standard

Medical Removal	No requirement in standard
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G. Noise	
Reference	OSHA 29 CFR 1910.95, NPR 1800.1B Chapter 4.9
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination 3. Exit/Reassignment Examination
Laboratory	<ol style="list-style-type: none"> 1. Baseline Audiogram or within 30 days 2. Audiogram Annually 3. Retest (audiogram) within 30 days if there is a STS
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Focused Physical Examination with focus on external and tympanic membrane
Target Organs	Ears and hearing system
Written Opinions	Required within 21 days of Standard Threshold Shift (STS) determination including statement that STS has occurred, whether further evaluation and testing indicated, and opinion on work relatedness or aggravation by occupational noise exposure, and limitation in use of protective hearing equipment
Medical Removal	No requirement in standard

H. Pesticide Applicator	
Reference	
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination 3. Variable or Exposure-Determined Examination

	4. Exit/Reassignment Examination
Laboratory	<ol style="list-style-type: none"> 1. Baseline (required before occupational exposure) Plasma and RBC cholinesterase baselines should be established by performing each test twice (3 to 7 days between tests) and averaging the result for the baseline for each. 2. Blood Chemistry 3. Urinalysis (dipstick) 4. Discretionary Tests: <ol style="list-style-type: none"> a. Pulmonary Function b. RBC cholinesterase levels for recent exposure c. Plasma cholinesterase for acute exposure
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination with focus on the skin and nervous system 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Target Organs	Kidney, liver, CNS, skin, lung
Medical Removal	If plasma or RBC cholinesterase activity is decreased by 30 percent or greater from baseline the employee should be removed from exposure until follow-up test levels are at least 80 percent of baseline.

I. Spray Painting	
Reference	
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Variable or Exposure-Determined Examination

Laboratory	<p>Discretionary Tests:</p> <ol style="list-style-type: none"> Blood Chemistry Profile CBC Chest X-ray Urinalysis Pulmonary Function Test
Physical Exam	<ol style="list-style-type: none"> Medical and Occupational History Physical Examination (discretionary) Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use Evaluation of other potential exposures, e.g. lead

J. Water and Sewage

Reference	
Frequency	<ol style="list-style-type: none"> Baseline Examination Annual Examination Variable or Exposure-Determined Examination
Laboratory	<ol style="list-style-type: none"> Immunizations offered: <ol style="list-style-type: none"> Tetanus Diphtheria (Td) Vaccine Hepatitis A and B Vaccine Discretionary Tests: <ol style="list-style-type: none"> Blood Chemistry Profile Complete Blood Count (CBC) Chest X-ray
Physical Exam	<ol style="list-style-type: none"> Medical and Occupational History Physical Examination (discretionary)

Target Organs	Liver, gastrointestinal, blood
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K. Welding	
Reference	NIOSH Criteria Document No. 88-110
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination 3. Variable or Exposure-Determined Examination
Laboratory	<ol style="list-style-type: none"> 1. Pulmonary Function (Base only) 2. Blood Chemistry Profile 3. Complete Blood Count (CBC) 4. Urinalysis 5. Visual Acuity, Depth Perception, and Color Discrimination 6. Chest X-ray (Baseline) 7. Discretionary <ol style="list-style-type: none"> a. Skin Cancer Screening
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination with focus on skin, respiratory, macular, cornea, fundus, and any condition that may interfere with ability to perform duties 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination Occupational Respirator Use 4. Evaluation of other potential exposures, e.g. metals, flux, compounds
Target Organs	Respiratory, eyes, varies with exposure type

3. Certification Examinations

A. Childcare Workers	
Reference	
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Variable or Exposure-Determined Examination
Laboratory	<ol style="list-style-type: none"> 1. PPD every 2 years 2. Discretionary Vaccines offered: <ol style="list-style-type: none"> a. Influenza b. Measles, Mumps, and Rubella (MMR) c. Tetanus/Diphtheria (Td) d. Polio e. Hepatitis A f. Chickenpox g. Hepatitis B
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational/Immunization History 2. Physical Exam with focus on ability to lift and bend repetitively
Written Opinion	Job Certification with any limitations.

B. Permit-Entry Confined Space/Tank Entry	
Reference	29 CFR 1910.134
Frequency	<ol style="list-style-type: none"> 1. Variable or Exposure-Determined Examination
Laboratory	<ol style="list-style-type: none"> 1. Audiogram 2. Visual Acuity, Depth Perception, and Color Vision (or demonstration of employee's ability to see and hear warnings, such as flashing lights, buzzers, and sirens) 3. Discretionary Tests:

	<ol style="list-style-type: none"> ECG Chest X-ray (Baseline) Urinalysis (dipstick) Pulmonary Function
Physical Exam	<ol style="list-style-type: none"> Medical and Occupational History Physical Examination with focus on employee's ability to carry out assigned duties and detection of any disease or abnormality that would make it difficult to work within confined spaces Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use Evaluation of other exposures may be required
Written Opinion	Job Certification with any limitations

C. Crane Operators/Riggers

Note: Includes ground floor, remote operation, high, cabin, ulpit

Reference	
Frequency	<ol style="list-style-type: none"> Baseline Examination Biennial
Laboratory	<ol style="list-style-type: none"> Audiogram: No hearing loss in better ear greater than 40 dB at 500, 1,000, 2,000, 3,000, and 4,000 Hz with or without a hearing aid Visual Acuity: Minimum of 20/40 Snellen in each eye without correction or separately corrected to 20/40 Snellen in both eyes with or without corrective lenses Depth Perception Field of vision at least 70 degrees in the horizontal median in each eye Color Vision

	6. Discretionary Tests: <ol style="list-style-type: none"> ECG Urinalysis Pulmonary function Hemoglobin (Hgb) and Hematocrit (Hct) 7. Contact the Drug-Free Workplace (DFW) coordinator to arrange testing
Physical Exam	Complete examination: <ol style="list-style-type: none"> History to ascertain any condition that may cause any sudden incapacitation or inability to perform duties Evaluation for reaction time, manual dexterity, and coordination No tendencies to seizures, dizziness, laustrophobia, sudden incapacitation, loss of physical control, or similar undesirable conditions such as insulin controlled diabetes No evidence of physical defects, or emotional instability, that in the opinion of the examiner, would present a hazard to self or others
Written Opinion	Job Certification with any limitations or referral for further testing

D. Diver	
Reference	29 CFR 1910.401-441, Subpart T
Frequency	<ol style="list-style-type: none"> Baseline Examination Annual Exam
Laboratory	<ol style="list-style-type: none"> Audiogram Baseline and Annual ECG Baseline Chest X-ray (PA and lateral) Pulmonary Function (Vital Capacity)

	<ol style="list-style-type: none"> 5. Urinalysis (dipstick) 6. Blood Chemistry 7. Complete Blood Count (CBC) 8. PPD 9. Visual Acuity and Color Discrimination 10. Discretionary Tests: <ol style="list-style-type: none"> a. Exercise Stress Test
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History to include predisposition to unconsciousness, vomiting, cardiac arrest, impairment of oxygen transport, serious blood loss, or anything that interferes with effective underwater work 2. Physical Examination
Written Opinion	Job Certification with any limitations, or recommend further specialized clinical evaluation or testing

E. DOT/Commercial Driver License/ Motor Vehicle Certification/Multiple Passenger Van	
Reference	49 CFR 391.41-49
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Biennial Exam unless more frequent examination is required by the examining provider (per DOT regulations)
Laboratory	<ol style="list-style-type: none"> 1. Audiogram: Hearing thresholds in better ear \leq 40 dB at 500, 1,000, 2,000 Hz with or without hearing aid 2. Visual Acuity: At least 20/40 (Snellen) in each eye without corrective lenses or visual acuity separately corrected to 20/40 or better with corrective lenses, distant binocular acuity of at

	<p>least 20/40 in both eyes with or without corrective lenses</p> <ol style="list-style-type: none"> 3. Depth perception 4. Gross field of vision: 70 degrees in each eye 5. Traffic signal color perception 6. Urinalysis (dipstick) 7. Discretionary Tests: <ol style="list-style-type: none"> 1. Chest X-ray 2. Complete Blood Count (CBC) 3. Blood Chemistry Profile 4. ECG 5. Exercise Stress Test 6. Pulmonary Function
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination with focus on any condition that may cause any sudden incapacitation or inability to perform duties, tendencies to seizures, dizziness, claustrophobia, loss of physical control, or similar undesirable conditions <p>(Cannot qualify if diabetic on insulin or if currently on medication for seizure disorder/epilepsy)</p>
Written Opinion	Job Certification with any limitations, or referral for additional specialized clinical evaluation or testing

F. Down Range/Shipboard Duty	
Reference	46 CFR Subpart 10.205; 12.02-27; 12.25

Frequency	<ol style="list-style-type: none"> 1. Baseline Examination (temporary assignment to ships, submarines, or NASA Test Range shipboard) 2. Annual Examination (for Masters, Chief Mates, Chief Engineers, 1st Assistant Engineer, Food Handlers, or anyone 60 years and up, or temporary assignments) 3. Variable (if none of the above): <ol style="list-style-type: none"> a. Every 5 years for 17 to 24 years of age b. Every 3 years for 25-49 years of age c. Every 2 years for 50 to 59 years of age
Laboratory	<ol style="list-style-type: none"> 1. Audiogram 2. Visual Acuity: 20/200 correctable to 20/40 (Snellen) for deck responsibility; correctable to 20/50 for engineering responsibility 3. PPD 4. Gross Visual Fields: If otherwise qualified, may have lost vision in one eye if remaining good eye's vision is passing 5. Color Perception (Pseudoisochromatic Plates or Eldridge--Green Color Perception Lantern) 6. Discretionary Tests: <ol style="list-style-type: none"> a. Chest X-ray b. ECG c. Travel Immunizations (offered)
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination 3. Shipboard food handlers must abide by the Food Handler protocol
Written Opinion	Job Certification with limitations

G. Fire Fighter	
Reference	National Fire Protection Association (NFPA) 1582
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination, if 40 or older 3. Biennial Examination, if between ages 30-39 4. Triennial Examination, if 29 or younger
Laboratory	<ol style="list-style-type: none"> 1. Audiogram: Requires less than 40 dB average hearing loss at 500, 1000, 2000, and 3000 Hz in the "Better ear." 2. Full Blood Chemistry (including cholesterol, HDL, LDL, triglycerides, lipid ratios) 3. CBC 4. Chest X-Ray: <ol style="list-style-type: none"> a. Baseline b. Every 5 years 5. ECG 6. Pulmonary Function: Ratio of FEV1/FVC must be greater than 0.75 if both FEV1 and FVC are below normal 7. Urinalysis (dipstick) 8. Visual Acuity: Far (Snellen) at least 20/40 binocular corrected and at least 20/100 binocular uncorrected for those routinely using corrective lenses. 9. Color Perception 10. Stress test (age determined): Graded Exercise Test (GXT) with diagnostic symptom limit (95% PAAMHR) "if clinically indicated by history or symptoms" offered annually after 50 years of age 11. Discretionary Tests:

	<ol style="list-style-type: none"> a. PPD screen b. Hepatitis C ab titer c. Immunizations offered: <ul style="list-style-type: none"> • Hepatitis B Vaccine • Tetanus/diphtheria (Td) Vaccine • MMR Vaccine • Polio Vaccine • Varicella Vaccine • Influenza Vaccine d. HIV screen e. Depth perception f. Gross visual fields
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination with focus on any condition that may cause any sudden incapacitation or inability to perform duties, tendencies to seizures, dizziness, claustrophobia, loss of physical control, or similar undesirable conditions 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Written Opinion	<p>Job Certification with:</p> <ol style="list-style-type: none"> a. Statement that the employee has sufficient strength, endurance, and emotional stability to perform the work b. An opinion the employee would not be a hazard to self or others c. Any limitations in job functions or ability to wear PPE

H. Food Handler	
Reference	21 CFR 10.115; 29 CFR 1910.141(h)
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination
Laboratory	<ol style="list-style-type: none"> 1. PPD 2. Hepatitis A (offered) 3. Discretionary Tests: <ol style="list-style-type: none"> a. CBC b. Chest X-Ray
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History focusing upon transmittable infectious diseases 2. Focused Physical Examination 3. Examiner should provide counseling regarding hygiene and prevention of cross contamination/fecal-oral diseases
Written Opinion	Job Certification with statement that employee is medically cleared as indicated in the Food Safety section of this document.
Note:	For Crew Food Handler, refer to Primary Crew Contact Physical

I. Locomotive Engineer	
Reference	49 CFR 240.121 and Appendix F
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Triennial Examination
Laboratory	<ol style="list-style-type: none"> 1. Audiogram: Hearing loss in better ear \leq 40 dB at 500, 1,000, 2,000 Hz with or without hearing aid 2. Visual Acuity: 20/40 with or without corrective

	<p>lenses</p> <p>3. Visual Fields: at least 70 degrees in each eye</p> <p>4. Color: Recognize and distinguish between the colors of railroad signals</p>
Physical Exam	<p>1. Medical and Occupational History</p> <p>2. Focused Physical Examination with focus on assessing any condition affecting vision and/or hearing that may cause any sudden incapacitation or inability to perform duties, tendencies to seizures, loss of physical control, or similar undesirable conditions</p>
Written Opinion	Job Certification with any limitations

J. Motive (Heavy) Equipment Operator

Note: includes specialized maintenance and construction equipment such as bulldozers, dump trucks, etc.

Reference	
Frequency	<p>1. Pre-placement/Baseline Examination</p> <p>2. Biennial Exam</p>
Laboratory	<p>1. Audiogram: Hearing threshold in better ear \leq 40 dB (500, 1000, 2000 Hz)</p> <p>2. ECG</p> <p>3. Pulmonary Function</p> <p>4. Visual Acuity: 20/40 with or without corrective lenses</p> <p>5. Gross Visual Fields: 70 degrees in each eye</p> <p>6. Color: Recognize and distinguish between the colors</p> <p>7. Urinalysis (dipstick)</p> <p>8. Discretionary Tests:</p> <p>a. Chest X-Ray</p> <p>b. Blood Chemistry Profile</p> <p>c. Complete Blood Count (CBC)</p>

	d. Stress Test (age determined)
Physical Exam	<ol style="list-style-type: none"> 1. Occupational and Medical History 2. Physical Examination with focus on assessing any condition affecting vision and/or hearing that may cause any sudden incapacitation or inability to perform duties, tendencies to seizures, loss of physical control, or similar undesirable conditions
Written Opinion	Job Certification with any limitations

K. Occupational Respirator Use	
Reference	OHSA 29 CFR 1910.134, and 29 CFR 1910.134 Appendices A, B1, B2 , C
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Baseline and annual respirator questionnaire 3. Variable or Exposure-Determined Examination
Laboratory	<ol style="list-style-type: none"> 1. Discretionary
Physical Exam	<ol style="list-style-type: none"> 1. OSHA Respirator Medical Evaluation Questionnaire (Mandatory: 1910.134 Appendix A) annually 2. Focused Physical Examination with a focus on employee's ability to use a respirator for baseline 3. Annual Focused Physical Examinations required only if positive responses to Questions 1-8, Section 2, Part A of Appendix C, or at the discretion of the physician 4. Discretionary Tests: <ol style="list-style-type: none"> a. Chest X-ray b. Pulmonary Function (spirometry)

Written Opinion	<p>Required Standard Written Medical Opinion including:</p> <ol style="list-style-type: none"> 1. Statement employee is medically able to use the respirator, or any limitations on respirator use related to a medical condition or related to workplace conditions in which respirator will be used 2. The need for any medical followup 3. A statement that employee has been given a copy of the written opinion 4. If the respirator is a negative pressure respirator and the PLHCP finds a medical condition that may place the employee's health at increased risk if the respirator is used, the employer shall provide a PAPR if the medical evaluation finds that the employee can use such a respirator; if a subsequent medical evaluation finds that the employee is medically able to use a negative pressure respirator, then the employer is no longer required to provide a PAPR
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L. Ordnance Handler	
Reference	
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination
Laboratory	<ol style="list-style-type: none"> 1. Audiogram 2. Visual Acuity 3. Depth Perception 4. Color Perception (as related to specific job requirements) 5. Urinalysis (dipstick) 6. Discretionary Tests: <ol style="list-style-type: none"> a. ECG

	<ul style="list-style-type: none"> b. Complete Blood Count (CBC) c. Blood Chemistry Profile d. Chest X-ray e. Pulmonary Function
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History to ascertain any condition that may cause any sudden incapacitation or inability to perform duties, tendencies to seizures, dizziness, claustrophobia, loss of physical control, or similar undesirable conditions 2. Physical Examination focusing on strength, endurance, agility, coordination, adequate visual acuity and hearing, and emotional stability
Written Opinion	Job Certification with any limitations

M. Primary Animal Contact

Note: May have to be modified to cover the animal species and specific agents being used.

Reference	
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination 3. Variable or Exposure-Determined Examination
Laboratory	<p>Baseline only:</p> <ol style="list-style-type: none"> 1. Complete Blood Count (CBC) 2. Blood Chemistry Profile 3. Pulmonary Function 4. PPD 5. Tetanus every 10 years 6. Discretionary: <ul style="list-style-type: none"> a. Serum Sample (10 mL) for storage

	<ul style="list-style-type: none"> b. Rabies Titer c. Rubeola Titer d. Hepatitis A and B e. Offer Rabies Vaccine
Physical Exam	<ul style="list-style-type: none"> 1. Medical and Occupational History (annual interim history) 2. Physical Examination with focus on immunization history, conditions with suppression of the immune system, allergies to animals, and prior illnesses from animal 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use
Written Opinion	Job Certification with any limitations

N. Primary Crew Contact

Reference	Flight Crew Health Stabilization Program JSC 22538
Frequency	<ul style="list-style-type: none"> 1. Mission specific: No earlier than L-21 every scheduled Space Shuttle launch 2. Permanent Primary Contacts: Annual 3. Food Depot: Every 6 months
Laboratory	<p>Required for Food Depot only:</p> <ul style="list-style-type: none"> a. CBC b. Urinalysis c. Blood Chemistry Panel and Cholesterol Panel d. TB screening (annual) e. Hepatitis A and Influenza Vaccine (offered) <p>Discretionary Tests for all others:</p> <ul style="list-style-type: none"> a. WBC count with differential

	<ul style="list-style-type: none"> b. Urinalysis c. Other serological or bacteriological testing d. TB screening
Physical Exam	Focused Physical Examination with focus on detection of infectious disease
Written Opinion	Certification status (JSC Form 270, KSC Form 13-116)

O. Security	
Reference	
Frequency	<ul style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination
Laboratory	<ul style="list-style-type: none"> 1. Audiogram 2. Visual Acuity, Color Vision, Visual Field 3. ECG 4. Urinalysis (dipstick) 5. PPD 6. Discretionary Tests: <ul style="list-style-type: none"> a. Pulmonary Function b. Exercise Stress Test
Physical Exam	<ul style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination with focus on ability to perform the essential functions of the job and maintain emotional stability
Written Opinion	<p>Required:</p> <ul style="list-style-type: none"> 1. Certification statement that the employee has emotional stability to perform the work 2. In the opinion of the examiner that no medical condition was detected which would place the

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| | <p>employee at increased risk of material impairment of the employee's health or would be a hazard to self or others</p> <p>3. Any limitations in job functions</p> |
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P. Self Contained Atmospheric Protective Ensemble (SCAPE)

Reference	29 CFR 1910.134
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination
Laboratory	<ol style="list-style-type: none"> 1. Blood Chemistry Profile 2. Complete Blood count (CBC) 3. Baseline Chest X-ray 4. Pulmonary Function 5. Audiogram: Hearing threshold less than 40 dB average hearing loss at 500, 1000, 2000, and 3000 Hz in the "Better Ear" 6. Visual Acuity: <ol style="list-style-type: none"> a. Far (Snellen) at least 20/70 in one eye and 20/100 in the other eye corrected to 20/20 in one eye and 20/40 in the other eye b. Near vision correctable to 20/40 (Snellen equivalent) bilaterally 7. Color perception 8. Depth perception 9. Gross visual fields intact 10. Discretionary Tests: <ol style="list-style-type: none"> a. Annual Chest X-ray b. Urinalysis with microscopic c. ECG

Physical Exam	<ol style="list-style-type: none"> 1. OSHA Respirator Medical Evaluation Questionnaire (Mandatory: 29 CFR 1910.134, Appendix A) 2. Physical Examination with focus on employee's ability to use a respirator under the conditions of use (i.e., temperature extremes) 3. Have sufficient strength, endurance, agility, coordination, and emotional stability to avoid interference with performance
Written Opinion	<p>Required:</p> <ol style="list-style-type: none"> a. Statement that the employee is medically able to use the Self Contained Atmospheric Protective Ensemble (SCAPE), or any limitations on SCAPE use related to a medical condition or related to workplace conditions in which the SCAPE will be used b. Any need for medical followup c. Statement that employer/employee has been given a copy of the written opinion

Q. Soldering	
Reference	NASA STD 8739.3, Soldered Electrical Connections
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual 3. Variable or Exposure-Determined
Laboratory	<ol style="list-style-type: none"> 1. Pulmonary Function (Baseline only) 2. Visual Acuity, Depth Perception, and Color Discrimination
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination with focus on skin and respiratory tract.

	<ol style="list-style-type: none"> 3. Evaluation of ability to wear respirator may be required, see protocol Section 3 K, Certification Examination. Occupational Respirator Use 4. Evaluation of other potential exposures, e.g. lead
Target Organs	Respiratory, skin, varies with type of solder used

R. Voluntary Respirator Use Note: For employees requesting elastomeric respirator	
Reference	OHSA 29 CFR 1910.134 Appendix A ,B1, B2, C, D
Frequency	1. Baseline Examination
Physical Exam	<ol style="list-style-type: none"> 1. Focused physical evaluation 2. History to ascertain any condition that may cause any sudden incapacitation, inability to perform duties. 3. Evaluation of ability to wear respirator under expected use conditions (i.e., temperature extremes). 4. OSHA Respirator Medical Evaluation Questionnaire (Mandatory: 1910.134 Appendix A)
Written Opinion	Required: <ol style="list-style-type: none"> a. Any limitations in job functions or ability to wear PPE

4. Flight Activities

A. First Class Airman's Medical Certificate (Airline Transport Pilot)	
Reference	14 CFR 67, NPR 7900.3 Aircraft Operations Management w/Interim Revision to Chapter 3, Appendix A, Aviation Medical Program Certification For NASA Pilots

Frequency	<div>1. Baseline Examination (high performance aircraft requires a NASA medical evaluation in addition to the FAA certificate, see NPR 7900.3, Appendix A)</div> <div>2. Every 6 months</div>															
Laboratory	<div>1. Audiogram (see standard for other acceptable means of testing hearing) with results no worse than:</div> <table><tr><td></td><td>500 Hz</td><td>1000 Hz</td><td>2000 Hz</td><td>3000 Hz</td></tr><tr><td>Better ear (dB)</td><td>35</td><td>30</td><td>30</td><td>40</td></tr><tr><td>Poorer ear (dB)</td><td>35</td><td>50</td><td>50</td><td>60</td></tr></table> <div>2. Visual Acuity:</div> <div><div>a. Distant: 20/20 in each eye with or without correction</div><div>b. Near: 20/40, Snellen equivalent at 16 inches, or better in each eye with or without correction</div><div>c. Near at age 50 or older: 20/40, Snellen equivalent at 16 and 32 inches, or better in each eye with or without correction</div><div>d. Intermediate: 20/40 or better in each eye with or without correction at age 50 and over</div></div> <div>3. Visual Fields: Normal</div> <div>4. Color Perception</div> <div>5. ECG (transmitted to FAA): First examination after 35 years of age and annually after 40 years of age</div> <div>6. Discretionary Tests:</div>		500 Hz	1000 Hz	2000 Hz	3000 Hz	Better ear (dB)	35	30	30	40	Poorer ear (dB)	35	50	50	60
	500 Hz	1000 Hz	2000 Hz	3000 Hz												
Better ear (dB)	35	30	30	40												
Poorer ear (dB)	35	50	50	60												

	<ul style="list-style-type: none"> a. Blood Chemistry Profile (can include fasting blood sugar and blood lipid profile). b. Complete Blood Count (CBC) c. Chest X-ray d. Pulmonary Function e. Urinalysis (dipstick) f. Exercise Stress Test
Physical Exam	<ul style="list-style-type: none"> 1. FAA Medical History Form 8500-8 2. Physical Examination by FAA certified physician with focus on any condition that may cause any sudden incapacitation or inability to perform duties, tendencies to seizures, dizziness, claustrophobia, loss of physical control, or similar undesirable conditions 3. Average BP should not exceed 155mm/95mm 4. Check references above for acceptable standards, equipment, and requirements
Written Opinion	<ul style="list-style-type: none"> a. Certification with any limitations, or referral to Aerospace Medical Certification Division, or Regional Flight Surgeon for possible further specialized clinical evaluation or testing. b. For waivers refer to NPR 7900.3 Appendix A c. Examinations conducted by non-NASA Aircrew Medical Examiners (AME) will require a records review by a NASA Occupational Health Clinic physician prior to recommendation to the Center Director. d. See 14 CFR 67 for Pilot Medical Standards

B. Second Class Airman's Medical Certificate (Commercial Pilot, Flight Engineer, Flight Navigator, and Air Traffic Control Tower Operator)

Reference	14 CFR 67 Appendix A
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Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination
Laboratory	<ol style="list-style-type: none"> 1. Audiogram See FAA I 2. Visual Testing and Requirements: See FAA I 3. ECG (transmitted to FAA): First examination after 35 years of age, and annually after 40 years of age 4. Discretionary Tests: <ol style="list-style-type: none"> a. Blood Chemistry Profile (can include fasting blood sugar and blood lipid profile) b. Complete Blood Count (CBC) c. Chest X-ray d. Pulmonary Function e. Urinalysis (dipstick) f. Exercise Stress Test
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination by FAA certified physician with focus on any condition that may cause any sudden incapacitation or inability to perform duties, tendencies to seizures, dizziness, claustrophobia, loss of physical control, or similar undesirable conditions 3. Average BP should not exceed 155mm/95mm 4. Check references above for acceptable standards, equipment, and requirements.
Written Opinion	<ol style="list-style-type: none"> a. Certification with any limitations, or referral to Aerospace Medical Certification Division, or Regional Flight Surgeon for possible further specialized clinical evaluation or testing. b. See 14 CFR 67 for Pilot Medical Standards

C. Third Class Airman's Medical Certificate (Private Pilot, Recreational Pilot, Student Pilot)	
Reference	14 CFR 67 Appendix A
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Every 2 years, if 40 years of age or older 3. Every 3 years, if under 40 years of age
Laboratory	<ol style="list-style-type: none"> 1. Audiogram: See FAA I 2. Visual Acuity: <ol style="list-style-type: none"> a. Distant: 20/40 or better in each eye with or without correction b. Near: 20/40, Snellen equivalent, or better in each eye at 16 inches with or without corrective lens c. Intermediate: No requirement 3. Visual Fields and Color: see FAA I 4. Discretionary Tests: <ol style="list-style-type: none"> a. Blood Chemistry Profile (can include Fasting Blood Sugar and Blood Lipid Profile). b. CBC c. Chest X-Ray d. Pulmonary Function e. Urinalysis (dipstick) f. ECG g. Exercise Stress Test
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination by FAA certified physician with focus on any condition that may cause any sudden incapacitation or inability to perform duties, tendencies to seizures, dizziness, claustrophobia, loss of physical

	<p>control, or similar undesirable conditions</p> <ol style="list-style-type: none"> 3. Average BP should not exceed 155mm/95mm 4. Check references above for acceptable standards, equipment, and requirements
Written Opinion	<ol style="list-style-type: none"> 1. Certification with any limitations, or referral to Aerospace Medical Certification Division or Regional Flight Surgeon for possible further specialized clinical evaluation or testing 2. See 14 CFR 67 for Pilot Medical Standards

D. Air Traffic Control Specialist or Flight Crew (Not requiring FAA Certification)

Reference	Office of Personnel Management (OPM) GS-2152
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Annual Examination
Laboratory	<ol style="list-style-type: none"> 1. Audiogram or demonstrate ability to hear normal conversation in a quiet room, using both ears, at a distance of 6 feet with the examiner's back turned 2. Visual Acuity: <ol style="list-style-type: none"> a. Distant 20/20 in at least one eye with or without correction b. Near vision 20/20, Snellen equivalent, with or without correction 3. Visual Fields: Normal 4. Color Vision 5. Tonometry 6. ECG 7. Exercise Stress Test 8. Chest X-ray 9. Discretionary Tests:

	<ol style="list-style-type: none"> a. Blood Chemistry (can include fasting blood sugar and blood lipid profile). b. Complete Blood Count (CBC) c. Chest X-ray d. Pulmonary Functions e. Urinalysis (dipstick)
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination (see OPM qualifications on age based blood pressure values) with focus on cardiovascular, neurological, musculoskeletal, general medical, psychiatric, and substance dependency
Written Opinion	Certification with any limitations

E. Qualified Non-Crew Member

Reference	
Frequency	<ol style="list-style-type: none"> 1. Baseline Examination 2. Biennial Examination
Laboratory	<ol style="list-style-type: none"> 1. Audiogram 2. Visual Acuity 3. Gross Visual Fields 4. Discretionary Tests: <ol style="list-style-type: none"> 1. Color Perception 2. Blood Chemistry Profile as in C above 3. Complete Blood Count (CBC) 4. Chest X-Ray 5. ECG 6. Pulmonary Function 7. Urinalysis (dipstick) 8. Exercise Stress Test

Physical Exam	<ol style="list-style-type: none"> 1. Medical and Occupational History 2. Physical Examination with focus on assessing any condition that may cause any sudden incapacitation or inability to perform duties, tendencies to seizures, dizziness, claustrophobia, loss of physical control, or similar undesirable conditions and emotional stability to avoid interference with performance, or in the opinion of the examiner could render a hazard to self or others
Written Opinion	Certification: Opinion that the employee has no physical limitation or medical condition which would prevent employee from performing their ordinary duties or be a hazard to self or others

5. Special Administrative Examinations

A. Fitness For Duty (FFD)	
Defined	Fitness for Duty (FFD) examinations are performed at the request of management when a change in work performance, productivity, or health is observed or suspected. NPR 1800.1B
Frequency	Variable upon an unexpected change in behavior or performance. The examination should be completed as soon as possible after a written request through management has been made
Scope	The physician should evaluate whether there is a medical or psychological condition impacting work performance. A job description with the physical requirements and essential job functions is an integral part of this evaluation. Cooperation and coordination with the treating physician(s), as well as other services such as the Employee Assistance Program (EAP) can be of help to an affected employee

Managers Responsibilities	<p>The supervisor/manager requesting the FFD examination should notify the employee and have their consent, provide documentation to the physician and a copy of the employee's job description.</p> <p>Managers must also decide if there is a "For Cause" need for drug testing based upon performance. Since this testing is not a medical test, the manager must contact the Drug Free Workplace (DFW) coordinator to arrange testing</p>
Laboratory	Discretionary
Confidentiality	Confidentiality is of utmost importance and all recommendations and reports must be limited to work-related matters, e.g., work limitation, modifications, or accommodations. No non-work related medical diagnosis should be released in the written opinion
Written Opinion	Required return to duty status for the employee's manager, including recommendations for work limitations or accommodations

B. Return to Work (RTW)	
Defined	RTW evaluations are usually performed when employees are returning to work after an illness or injury of greater than 3 business days
Frequency	Variable or Exposure-Determined Examination
Scope	<ol style="list-style-type: none"> 1. Vital signs 2. The evaluation should focus on the employee's ability to perform the essential job functions with or without work limitations, modifications, or accommodations. The information from the employee's physician is reviewed, and a decision is made whether a focused physical and/or tests are necessary

Managers Responsibilities	The manager requesting the RTW examination must provide a copy of the employee's job description that includes the functional and physical requirements
Laboratory	Focused laboratory based upon the prior condition/problem of the employee
Confidentiality	Confidentiality is of utmost importance and all recommendations and reports must be limited to work-related matters, e.g., work limitation, modifications, or accommodations
Written Opinion	<p>A RTW certificate for the employee's manager should indicate:</p> <ul style="list-style-type: none"> a. A statement of work limitations (including modifications and duration) b. A statement of any Personal Protective Equipment (PPE) needed or limitations in use of PPE c. For an occupational related issue, safety, and health should receive a copy of the RTW statement

C. International Traveler

Reference	
Frequency	<ol style="list-style-type: none"> 1. Variable or Exposure-Determined Examination 2. Note: Medical clearance required for NASA civil service employees traveling outside the United States or its possessions, with special emphasis for those traveling to Russia or the former nations under the Soviet Union, TAL site, or any developing or medically under-served country
Laboratory	Immunizations offered based on recommended WHO and CDC country requirements

Physical Evaluation	<ol style="list-style-type: none"> 1. Medical Record Review 2. Medical and Occupational History 3. Physical Examination (discretionary) 4. Offer HRA 5. Provide education based on health risk assessment with emphasis on food and water precautions and other specific issues related to travel destination
Written Opinion (Clearance)	International Travel Worksheet, NASA Form 1711

6. Voluntary Health Maintenance

A. Complete Health Maintenance Examination	
Reference	
Frequency	<ol style="list-style-type: none"> 1. Offer every 3 years to civil servants 2. Offer at retirement to civil servants
Laboratory	<ol style="list-style-type: none"> 1. Vital signs (weight, blood pressure, pulse rate, rhythm) 2. Offer total body skin examination 3. Skin fold or BMI 4. Baseline and when medically indicated: <ol style="list-style-type: none"> a. Visual Acuity b. Audiogram c. Pulmonary Function d. Exercise Stress Test 5. ECG 6. Mammograms every 1-2 years age 40 to 49, annually for age 50 to 70

	<ol style="list-style-type: none"> 7. Colonoscopy every 10 years after age 50, earlier with family history (refer to private MD) 8. Tonometry (if available) 9. Menopause counseling for females age 45 and older 10. Breast self-examination education 11. Breast examination 12. PAP smear annually (every 3 years if negative consecutively x 3) 13. PSA test for men age 50 and older 14. Digital Rectal and Testicular examination offered to men age 40 and older 15. Complete Blood Chemistry (CBC) 16. Blood Chemistry Profile 17. Urinalysis 18. Hemocult
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Family History, if history of smoking?offer smoking cessation 2. Complete Physical Examination 3. Offer Health Risk Assessment (HRA)
Target Organs	Multiple Organs
Written Opinion	A summary of examination and laboratory results sent to the employee

B. Annual Health Maintenance Examination

Reference	
Frequency	Offer annually to civil servants

Laboratory	<ol style="list-style-type: none"> 1. Vital signs (weight, blood pressure, pulse rate, rhythm) 2. Mammograms every 1-2 years age 40 to 49, annually for age 50 to 70 3. PAP smear annually (every 3 years if negative consecutively x 3) 4. PSA men age 50 and older 5. Digital Rectal and Testicular Examination offered to men age 40 and older 6. Complete Blood Count (CBC) 7. Blood Chemistry Profile 8. Urinalysis 9. Hemocult
Physical Exam	<ol style="list-style-type: none"> 1. Medical and Family History, if history of smoking?offer smoking cessation 2. Focused Physical Examination 3. Offer Health Risk Assessment (HRA)
Target Organs	Multiple Organs
Written Opinion	A summary of examination and laboratory results sent to the employee

C. Fitness Center Clearance	
Reference	
Frequency	Every 3 years
Laboratory	Discretionary
Physical Exam	<ol style="list-style-type: none"> 1. Review of Physical Activity Readiness Questionnaire (PARQ) 2. Vital signs (blood pressure, pulse) 3. Refer to NASA Occupational Medicine Clinic for clearance if PARQ responses are positive or vital

	<p>signs are abnormal</p> <p>4. Physical examination and appropriate testing required if referred by Occupational Medicine Clinic or employees healthcare provider. Documentation must be received from personal healthcare provider and reviewed by Medical Director. Medical Director responsible for final decision on fitness center clearance</p>
Written Opinion (Clearance)	Medical clearance may specify any limitations in clearance duration (i.e., 1-year) or Fitness Center activity

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